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# Prevalence of Anxiety and Depression in Mexican Migrant Farmworkers: A Review of the Literature

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# Prevalence of Anxiety and Depression in Mexican Migrant Farmworkers: A Review of the Literature

## **Abstract**

The purpose of this literature review is to provide a comprehensive review on the topic of Mexican migrant farmworkers' mental health. Specifically, this review focuses on the prevalence rates of anxiety and depression, as well as the role of sociocultural and demographic variables in the prevalence of symptomatology for this population. A critical review of the studies' methodologies and conclusions is presented in order to provide valuable information for health practitioners, public policy makers, and researchers alike who work with this population. Overall, approximately 25% to 33% of all Mexican migrant farmworkers are likely struggling with mental health concerns. Specifically, workers in the Midwest and East Coast endorsed significantly high levels of depression and anxiety symptomatology. The lifetime prevalence rates of depression and anxiety amongst this population were lower than those of non-farmworker Mexican immigrants. Rates of depression and anxiety were increased by specific variables related to social support/social isolation, religion and religiosity, acculturation and acculturative stress, psychological ambivalence and perceived control about being a migrant farmworker, and living and working conditions. Mexican migrant farmworkers are a population in need. Attention to variables associated with migrant farmworkers' living and working conditions can have a positive effect in reducing symptoms. This review highlights the needs of this community and signals a call to action for individuals who provide services to Mexican migrant farmworkers living in the United States.

## **Degree Type**

Thesis

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PREVALENCE OF ANXIETY AND DEPRESSION IN MEXICAN MIGRANT

FARMWORKERS:

A REVIEW OF THE LITERATURE

A THESIS

SUBMITTED TO THE FACULTY

OF

SCHOOL OF PROFESSIONAL PSYCHOLOGY

PACIFIC UNIVERSITY

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BY

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## ABSTRACT

The purpose of this literature review is to provide a comprehensive review on the topic of Mexican migrant farmworkers' mental health. Specifically, this review focuses on the prevalence rates of anxiety and depression, as well as the role of sociocultural and demographic variables in the prevalence of symptomatology for this population. A critical review of the studies' methodologies and conclusions is presented in order to provide valuable information for health practitioners, public policy makers, and researchers alike who work with this population. Overall, approximately 25% to 33% of all Mexican migrant farmworkers are likely struggling with mental health concerns. Specifically, workers in the Midwest and East Coast endorsed significantly high levels of depression and anxiety symptomatology. The lifetime prevalence rates of depression and anxiety amongst this population were lower than those of non-farmworker Mexican immigrants. Rates of depression and anxiety were increased by specific variables related to social support/social isolation, religion and religiosity, acculturation and acculturative stress, psychological ambivalence and perceived control about being a migrant farmworker, and living and working conditions. Mexican migrant farmworkers are a population in need. Attention to variables associated with migrant farmworkers' living and working conditions can have a positive effect in reducing symptoms. This review highlights the needs of this community and signals a call to action for individuals who provide services to Mexican migrant farmworkers living in the United States.

Keywords: migrant farmworkers, Mexican, Hispanic/Latino, anxiety, depression, prevalence rates, caseness

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## INTRODUCTION

### The Life of Maria Isabel Vasquez Jimenez

On May 14, 2008, Maria Isabel Vasquez Jimenez collapsed after nine hours of tying grape vines in over ninety-five degree heat on a farm east of Stockton, California. Two days later the undocumented worker from an indigenous village in Oaxaca, Mexico died. The San Joaquin County coroner discovered that the seventeen-year-old farmworker was two months pregnant and confirmed that she had died of heat stroke. According to farmworkers tying grape vines alongside Jimenez, the nearest water cooler was a ten minute walk away, and the strict foreman did not allow them a long enough break to stop and get a drink (Khoka, 2008, June 6). The state Division of Occupational Safety and Health fined the company, Merced Farm Labor, \$262,700 for violating eight workplace safety rules. Inspectors found that the company not only failed to provide water and shade but also deliberately neglected to train workers and managers on how to stay safe while working in high heat (Associated Press, 2008, July 25).

The life of Maria Isabel Vasquez Jimenez reminds us that the struggle to secure basic human rights for migrant farmworkers in the United States is as ripe for action today as it was more than half a century ago under the leadership of César Chavez. The exact number of migrant farmworkers employed in the U.S. is difficult to determine; however, estimates range between three to five million (Carroll, Samardick, Bernard, Gabbard, & Hernandez, 2005). Migrant farmworkers are major contributors to the United States' multi-billion dollar agricultural industry, especially in the production of labor-intensive horticultural crops such as fruit, tree nuts, and vegetables (Carroll et al., 2005; Kandel, 2008). However, they are often subject to poverty wages, malnutrition,



hazardous and unsanitary working and living conditions, discrimination, exploitation, and lack of legal protection and social benefits (Rothenberg, 2000).

Being a foreign-born migrant worker incurs additional stressors. Approximately 77% of farmworkers in the U.S. are foreign-born, and it is estimated that more than 75% of the foreign-born farmworkers are from Mexico (Carroll et al., 2005). The decision to immigrate to come find work in the U.S. agricultural industry (Binford, 2005) has been a common response by Mexican workers to the lack of economic opportunity within their own country, partly due to the proximity of the U.S. Mexico-born migrants endure the stress of deciding to leave their families and country to go to a foreign country for work (Grzywacz, Quandt, Early, Tapia, Graham, & Arcury, 2006); and furthermore the physical journey from Mexico to the U.S. can be treacherous and traumatic, especially without documentation. Due to the stressors being encountered by most Mexican migrant farmworkers, it has long been assumed that they are more susceptible to mental health deterioration.

The impact of the migrant lifestyle on the mental health of this population is poorly understood. Although new findings show better physical health and mental health indexes among Mexican immigrants—including migrant agricultural workers—as compared to the U.S.-born Mexican and general populations, evidence suggests that conditions such as depression and anxiety are common among migrant farmworkers from Mexico (California Institute for Rural Studies [CIRS], 2001, October; Escobar & Vega, 2000).

### Purpose of Literature Review

In recent decades the published literature regarding the mental health of Mexican migrant farmworkers in the U.S. has grown substantially; however, there has been no effort to consolidate the findings and discuss their practical implications. Therefore, the purpose of this literature review is to provide a comprehensive review on the topic of Mexican migrant farmworkers' mental health. Specifically, this review focuses on the prevalence levels of anxiety and depression, as well as the relationship between sociocultural and demographic variables and the prevalence of symptomatology, for this population. It is important to study the prevalence rates of anxiety and depression within the Mexican migrant farmworker community in order to plan interventions to address the social adjustment problems of Mexican migrant farmworkers and their families, as well as to facilitate access to culturally appropriate mental health services. Such a review will hopefully be accessible to and inform decisions and practices of the health providers and policy makers who come into contact with this specific population. To begin I present the definition of a migrant farmworker followed by basic characteristics of Mexican migrant farmworkers in order to paint a more vivid picture of their typical living and working conditions in the U.S.

### Definition of a Migrant Farmworker

For the purposes of this review, a migrant farmworker is defined as an individual who travels from one region or country to another to do agricultural work and who has the intention of returning home. This category is distinct from seasonal farmworkers who work in agriculture temporarily during specific seasons and maintain a permanent residence which they return to daily.

## Basic Characteristics of Migrant Farmworkers

### *Migration Streams*

Migrant farmworkers are located in almost every state of the U.S. and usually reside in rural areas (Hiott, Grzywacz, Davis, Quandt, & Arcury, 2008). There are three major agricultural migration patterns in the United States: the Western Stream, the Midwestern Stream, and the Eastern Stream. Among the migrant farmworkers surveyed by the National Agricultural Workers' Survey (NAWS, 2001-2002) (Carroll et al., 2005)<sup>1, 2</sup>, 26% of migrant farmworkers traveled within the United States and 35% traveled back-and-forth from a foreign country, primarily Mexico. The Western Stream is comprised of California, Oregon, and Washington and primarily consists of Mexican migrants who return to Mexico, southern California, or Arizona after the harvest season. In recent years an increasingly diverse farm labor pool from indigenous backgrounds has come to California, including the Hmong from Southeast Asia, the Mixtec and Zapotec from Mexico, and the Maya from Guatemala (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000). The Midwestern Stream is comprised primarily of Mexican individuals who use south Texas and Mexico as their homebase and work winter crops there before moving up into Ohio and Michigan. The Eastern Stream begins in Florida and runs along the east coast to Maine. The Eastern Stream has traditionally consisted of African-American families, but now consists primarily of Mexican individuals, as well as Central Americans, South Americans, and Puerto Ricans (Magaña & Hovey, 2003). Of all the

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<sup>1</sup> In the NAWS, migrants are defined as persons who travel at least 75 miles during a 12-month period to obtain a farm job.

<sup>2</sup> The population sampled by the NAWS consists of nearly all farm workers in crop agriculture, including field packers and supervisors. The sample does not include poultry, livestock and fishery workers, secretaries, mechanics, or H-2A foreign temporary workers.

states, North Carolina has seen the largest growth of Mexican migrant workers during the past decade (Grzywacz et al., 2006; Kupersmidt & Martin, 1997).

### *Demographics*

According to the NAWS (2001-2002), the average farmworker in the U.S. is male, thirty-three years old, married with two children, and born in Mexico. However, half of the workers surveyed were younger than thirty-one years old. Eighty-one percent of participants reported Spanish as their native language and 44% reported that they could not speak English “at all.” The overall average education level amongst the workers surveyed was seventh grade, and among the foreign-born workers only 6% completed the twelfth grade (Carroll et al., 2005).

### *Authorization to Work*

More than half of the hired crop labor force in the U.S. lacks legal authorization to work, and nearly all “newcomers” (i.e., those who have worked in the U.S. for less than one year) are unauthorized to work in the U.S. It is estimated that “newcomers” are approximately 17% of the migrant farmworker population. Unauthorized workers surveyed were twice as less likely to be accompanied by their partners and children, and 87% of the unauthorized workers surveyed had at least one child and/or spouse living in Mexico.

### *Working Conditions*

Farmwork itself is one of the top three most dangerous occupations in the U. S.; in addition, the working conditions of migrant farmworkers are often inferior (National Institute for Occupation Safety and Health [NIOSH], 2007). Agricultural workers are at high risk for fatal and nonfatal injuries, work-related lung diseases, noise-induced hearing

loss, skin diseases, and certain cancers associated with chemical use and prolonged sun exposure (Kirkhorn & Schenker, 2002). Additionally, Mexican migrant farmworkers are a vulnerable population who frequently encounter lack of respect and discrimination by employers or other hiring agencies, unjust working conditions perpetuated by implicit and explicit intimidation, and lack of access to social benefits. Many investigative reports have revealed substandard and exploitive field conditions, including lack of drinking water, inadequate waste facilities, and enslavement (Carroll et al., 2005; NFWM, n.d.).

### *Wages and Benefits*

On average, migrant farmworkers are paid less than settled farmworkers and the majority earn below-poverty wages (Kandel, 2008). Approximately two-thirds of U.S. migrant households and 70% of U.S. migrant children live below the federal poverty line (Rothenberg, 2000). Thirty percent of all NAWS (2001-2002) respondents had total family incomes that were below the federal poverty guidelines: On average, the total individual farmworker income was between \$10,000 and \$12,499, and the average total farmworker family income range was between \$15,000 and \$17,499. Furthermore, only 23% of the entire sample had health insurance. After controlling for income, employment status, and other variables known to be associated with health insurance status, the foreign-born adults aged eighteen to sixty-four years were twice as likely to be without health insurance or worker's compensation benefits as their native-born counterparts (Pol, Phani Tej, & Pol, 2002). Despite poverty wages and lack of employment benefits, only 22% of the respondents said that they or someone in their household had used public assistance (i.e., Medicaid, 15%; WIC, 11%; and Food Stamps, 8%), and less than 1%

reported that they or someone in their family had received general assistance (Carroll et al., 2005).

### *Transportation*

Here I will briefly review some of the various modes of transportation used by migrant farmworkers due to the important role transportation plays in a person's ability to secure work. The majority of the NAWS (2001-2002) sample drove their own car (42%), and the remaining half carpooled (35%), rode a labor bus (8%), walked (8%), or paid a "raitero"<sup>3</sup> (7%). Seventy-one percent of the workers who either traveled via carpool, labor bus, or "raitero" paid money to someone, and foreign-born newcomers were more likely than all other workers to get to work by these means (Carroll et al., 2005).

### *Living Conditions*

Due to high poverty rates, frequent mobility, and low rental availability in small rural communities, migrant farmworkers have a long documented history of very poor housing conditions, which include dilapidated structures, overcrowding, and homelessness (NFWM, n.d.). Migrant workers in the NAWS (2000-2001) sample were more likely than settled workers to live in employer-supplied housing, and less likely than settled workers to live in housing that either they or a family member owned. Migrants were as likely as settled workers to live in a trailer or mobile home, but they were more likely than settled workers to live in a dormitory or barracks housing (6% vs. 1%, respectively) and apartments (26% vs. 20%, respectively), and less likely than settled workers to live in a single family home or unit (Carroll et al., 2005). Migrant workers not accompanied by their spouses and/or families are the most vulnerable to substandard

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<sup>3</sup> "Raitero", derived from "ride", is the Spanish word for a person who charges a fee for providing a ride to work.

housing since most agency efforts to rectify migrant farmworkers' living conditions have focused on finding shelter for migrant families (López & Legato, 1997).

The economic, health, and social needs of Mexican migrant farmworkers in the U.S. are considerable. The evidence reviewed in this paper suggests the importance of addressing some of these economic and sociocultural barriers in order to ameliorate any harmful effects on mental health functioning. Such efforts might help surmount the major work and lifestyle challenges Mexican migrant farmworkers face in the U.S.

## METHOD

My first step in this review process was an extensive search of research studies published between 2000 to the present, pertaining to Hispanic and/or Latino and/or Mexican migrant farmworkers. The majority of published mental health research with this population occurred in the timeframe reviewed, and lends itself to an examination of the contemporary issues related to the topic. I examined the abstracts of these studies and obtained complete copies of articles that specifically studied the prevalence rates of depression and anxiety among Mexican migrant farmworkers in the U.S. In the next section, I will present and discuss some basic definitions of the major topics in this review.

## DEFINITIONS

### Depression

There are five categories of depression diagnoses in the *Diagnostic and Statistical Manual of Mental Disorders-IV-Text Revision (DSM-IV-TR*; American Psychiatric Association, 2000). Only the categories of Major Depressive Disorder (MDD) and Dysthymic Disorder were considered for this review. MDD is characterized by one or

more Major Depressive Episodes (i.e., at least 2 weeks of depressed mood or loss of interest accompanied by at least four additional symptoms of depression). Dysthymic Disorder (referred to as Dysthymia from here on) is characterized by at least 2 years of depressed mood for more days than not, accompanied by additional depressive symptoms that do not meet criteria for a Major Depressive Episode (*DSM-IV-TR*). Symptoms can include feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. These problems can become chronic or recurrent and lead to substantial impairments in an individual's functioning. At its worst, depression can lead to suicide. In the workplace, depression is associated with unintentional injury, absenteeism, and decreased productivity. Accurate diagnosis and treatment of depression is associated with improved physical, mental health, social, and occupational functioning (Mazzoni, Boisko, Katon, & Russo, 2007).

### Anxiety

There are thirteen categories of anxiety diagnoses in the *DSM-IV-TR* (APA, 2000). Only the categories of Agoraphobia, Panic Disorder without Agoraphobia, Specific Phobia, and Social Phobia were considered for this review. Agoraphobia is anxiety about, or avoidance of, places or situations from which escape might be difficult (or embarrassing) or in which help may not be available in the event of having a Panic Attack or panic-like symptoms. Agoraphobia without a history of Panic Disorder is characterized by the presence of Agoraphobia and panic-like symptoms without a history of unexpected Panic Attacks. Specific Phobia is characterized by clinically significant anxiety provoked by exposure to a specific feared object or situation, often leading to avoidance behavior. Social Phobia is



characterized by clinically significant anxiety provoked by exposure to certain types of social or performance situations, often leading to avoidance behavior. Symptoms of anxiety disorders can include feelings of impending doom, fear, dryness of mouth, sweating, restlessness, racing heart, butterflies in the stomach, itching and tingling all over the body, shortness of breath, having to visit the bathroom repeatedly, decreased concentration, inability to make decisions or carry out work, and disturbed eating or sleeping routines. Prolonged exposure to stressful situations, such as intense physical abuse or military combat, can also result in the development of anxiety disorders (World Health Organization [WHO], n.d.).

#### Acculturation and Acculturative Stress

*Acculturation* has been defined as the changes that an individual experiences as a result of being in contact with other cultures (Torres & Rollock, 2007). The term *acculturative stress* refers to the stress that directly results from and has its source in the acculturative process (Hovey & Magaña, 2000). It has been suggested that individuals who experience high levels of acculturative stress may be at risk for the development of anxiety and depression (Hovey & King, 1996).

### LITERATURE REVIEW

#### Previous Research

The focus of this literature review is on studies published between 2000 and the present; however, it is important to examine two earlier studies that led the way for future research about the mental health of migrant farmworkers in the U.S.

In 1985, Vega and colleagues published the first study to examine predictors of mental health in Mexican farmworkers in the U. S. They examined the psycho-

physiological distress among adult Mexican farmworkers in central California through the use of the Health Opinion Survey (HOS). The reported HOS caseness rate for mental health distress was 20%, which according to the researchers “resembled those of other low-income groups, such as “southern blacks” (Vega et al., 1985). They conjectured that Mexican farmworkers, especially during their middle ages, are at high risk for physical illness and psychological distress more so than educated urban Mexican-Americans and the general population (Vega et al., 1985). Limited social mobility, transience, poverty, discrimination, and a high rate of traumatic life events were identified as possible contributors to psychological stress even though the descriptive study did not assess the effect of psychosocial risk factors.

In 1986, White-Means (1991) sampled a small population of migrant farmworkers in upstate New York to answer the question of how best to provide access to medical services to “indigent” populations. The study’s findings indicated that higher levels of mental well-being and better physical and mental health significantly increased the wages of the farmworkers. The factors that significantly contributed to low mental well-being scores, in order of importance, were “(1) whether the daily life is full of things of interest, (2) general feelings (spirits), (3) whether relaxed or tense, (4) whether depressed or cheerful, and (5) the amount of energy available” (White-Means, 1991, p. 49). White-Means concluded that efforts to modify any or all of these factors could not only increase the mental health of farmworkers, but also increase their wage earnings and chances for living a long life.

Both of these seminal studies inferred a negative relationship between the stressors of being a migrant farmworker and migrant farmworker mental health, but their

methodologies were limited. Vega (1985) did not use a standardized measure to assess specific symptoms of anxiety or depression (Alderete et al., 1999). Also, even though White-Means (1991) utilized a structured survey instrument that had been validated to measure farmworkers' mental health, it did not assess specific symptoms of either anxiety or depression. Additionally, the analysis was based on data obtained from a small sample of farmworkers. Despite these limitations, the studies introduced real concerns for the mental well-being of migrant farmworkers that warranted further investigation.

### Recent Research

Next I will examine studies published between 2000 and the present.<sup>4</sup> I outline the major investigations and their designs, methodologies, and conclusions by type of measure used to assess the prevalence rates of anxiety and depression in Mexican migrant farmworkers. The studies are also presented by location and in chronological order unless otherwise noted. Lastly, I critique the studies' relative strengths and limitations, summarize the findings, and discuss implications for future research.

### *Structured Psychiatric Interview*

There is only one study (to the best of this author's knowledge) that utilized a structured psychiatric interview rather than a screening measure to estimate the prevalence rates of psychiatric disorders in Mexican migrant farmworkers. Alderete and colleagues (2000) utilized the University of Michigan-Composite International Diagnostic Interview (UM-CIDI), which is a fully structured clinical interview for use in large-scale international psychiatric epidemiologic research. The UM-CIDI was specifically adapted for use with respondents of Mexican origin and modified to be more culturally comprehensive and linguistically sensitive (Alderete et al., 2000).

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<sup>4</sup> One study published in 1999 by Alderete, Vega, & Aguilar-Gaxiola was also included in this review.

Alderete and colleagues (2000) collected data in 1996 to examine the lifetime prevalence of and risk factors for twelve psychiatric disorders by sex and ethnicity, (Indian<sup>5</sup> vs. non-Indian) among Mexican migrant farmworkers in Fresno County, California. A total of 500 men and 501 women, between the ages of eighteen and fifty-nine years, were selected under a cluster sampling design. Overall, Indian respondents constituted 11% of the sample (seventy-four men; thirty-three women). The UM-CIDI was used to ascertain caseness, and acculturation was measured with a seven-item questionnaire that focused on language preference (Spanish or native language vs. English). Their findings were compared to those of the Mexican-American Prevalence and Services Survey (MAPSS) in Fresno County, CA (non-migrant), the U.S. National Comorbidity Survey (NCS, 1998), and a field survey conducted in Mexico City.

Demographic analysis revealed that migrant women were more likely to have access to resources and social support within the U.S., and Indian respondents were more likely to be younger and earn below-poverty wages. Female respondents were more likely to be U.S. residents, married, and have an annual family income greater than \$9000 (U.S.) as well as more than six years of formal education. Eighty-three percent of the Indian respondents had annual family incomes below the poverty level for a two-person household whereas the mean income for non-Indian respondents, both men and women, was above poverty level. No significant acculturation level differences surfaced between genders, although 54% of Indians had a medium to high preference for English over Spanish or their native language vs. 28% of the non-Indian respondents.

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<sup>5</sup> Indian respondents were identified by asking whether they themselves, their parents, or their grandparents could speak a native language (e.g., Mixtec, Zapotec, Nahuatl) thought to represent an indigenous heritage.

The lifetime rate of any psychiatric disorder was lower for women than for men (16.3% vs. 27.6%), and was greater for Indians than non-Indians (26% vs. 20.1%). The difference in rates between genders was attributable to the higher rates of alcohol and drug abuse by men. The lifetime rates and risk of mood disorders (men = 7.2%; women = 6.7%) and anxiety disorders (men = 15.1%; women = 12.9%) were similar for migrant men and women; however, men's rates of alcohol dependence were nine times higher than among women, and men's rates of drug dependence were five times higher. The most prevalent disorder among women was agoraphobia (6.9%), and the most prevalent disorder among men was alcohol dependence (8.9%). The most prevalent disorder among Indians was alcohol dependence (9.9%), and the most prevalent disorders among non-Indians were simple phobia (6.2%) and alcohol dependence (6.2%).

The analysis of acculturation and comparison of prevalence rates with other relevant studies suggested an increase in onset of psychiatric disorders with increased length of residence in the U.S. This has important implications for future research and intervention. Higher acculturation scores increased the likelihood of mood disorders and of drug use or dependence but not anxiety disorders. Those who were primarily residents of Mexico had less than half the risk of alcohol or drug abuse or dependence. The likelihood of lifetime alcohol abuse or dependence was higher among those aged twenty-six to thirty-nine and those aged forty to fifty-nine years than among young migrant workers (i.e., 18 to 25-year-olds). The lifetime prevalence rate of any disorder among Fresno County Mexican migrant farmworkers (21.1%) was similar to that of recent Mexican immigrant residents in Fresno County (18.4%) and to rates found in Mexico City (23.4%). But the lifetime prevalence rate of any disorder among the Mexican

migrant farmworkers was less than half when compared to the rate for U.S.-born Mexican Americans (48.7%) or for the U.S. Hispanic population as a whole (51.4%). The authors concluded that the similarity in rates of psychiatric disorders between residents of Mexico, migrants, and recent immigrants in the United States argues against the theory of selective migration of healthy individuals. Alderete and colleagues recommended future research “to elucidate differential effects of stressors in men and women as well as protective factors associated with the living and working conditions of migrant populations” (Alderete et al., 2000, p. 613).

Strengths of the Alderete study include the use of a well-standardized, culturally sensitive, structured clinical interview with a large sample that included both men and women. However, the sample size still is small in comparison with most epidemiological studies. The area cluster sampling method maximized representativeness of the participants, which is a difficult condition to attain due to the constraints of the migrant lifestyle. Their sample also included and identified participants from indigenous backgrounds although they were not able to include Indians who did not speak English or Spanish. The UM-CIDI is the same instrument used in the NCS (1993) and is based on the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders-III-R* (DSM-III-R) which is useful for measurement and comparison purposes with other studies. As valuable as the information the researchers did collect is, one, the authors only reported lifetime prevalence rates, which are likely to produce higher estimates because they are based on an individual experiencing the depressive or anxiety condition within their entire lifetime versus a more narrow point prevalence measurement. Another weakness of the study is that it did not examine culturally bound syndromes specific to

Mexican culture. This could contribute to an inaccurate measurement of the participants' mental distress due to their symptoms not being evaluated in a culturally appropriate manner.

### *Screening Instruments*

#### *Primary Care Evaluation of Mental Disorders Patient Health Questionnaire*

Mazzoni and colleagues (2007) utilized the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD PHQ), validated in both Spanish and English, to assess depression, risk for alcohol abuse, and panic disorder. The instrument does not offer lifetime prevalence rates of depression or anxiety-related disorders according to *DSM*-criteria (Spitzer, Kroenke, Williams, et al., 1999). "Major" depression was determined by a score of ten or more on the PRIME-MD PHQ and the endorsement of five or more depressive symptoms present for more than half of the days with at least one of these symptoms being either depressed mood or anhedonia as assessed by a trained interviewer. "Minor" depression was identified by a score of four or more on the PRIME-MD PHQ and endorsement of two to four symptoms present for more than half the days with one of the symptoms being either depressed mood or anhedonia as assessed by a trained interviewer.

Mazzoni and colleagues conducted their research during June and August of 2002 in eleven "Hispanic" farmworker housing units in Oregon, Idaho, and Washington. A total of 315 Hispanic farmworkers completed the PRIME-MD PHQ, as well as the twelve-item World Health Organization Disability Assessment Schedule II (WHO DAS II) to assess disability. Medical comorbidity was measured by a self-rated list of medical illnesses from the Medical Outcomes Study.

Demographic analysis revealed an equal number of men and women, who had on average an elementary school education and annual earnings below \$8000 (U.S.). Eighty-one percent of participants spoke Spanish as their first language, and 14% spoke an indigenous language as their first language (i.e., Mixteco, Trique, Sabeteco, or Mum). Although 90% of the sample was born in Mexico, 6% were born in the U.S. and 4% were born in Guatemala. The length of time in the U.S. ranged from one month to thirty-two years. Thirty-five percent of the sample was classified as migrant workers whereas 65% were classified as seasonal workers who lived in one residence year-round. The majority worked with row crops (56%) or tree fruits and nuts (25%). Other job types included food processing, nurseries, fisheries, farm equipment/irrigation, forestry, dairy and managerial were other job types.

Overall, the rates of major and minor depression were 3.2% and 6.3% respectively. Total panic disorder prevalence was determined to be 1.9% and those with depression had a significantly higher prevalence of panic disorder compared with participants without depression (13.3% vs. 0.7%). Approximately five percent of the participants met the criteria for risk of alcohol abuse, but there was no significant association between a depression diagnosis and risk of alcohol dependence. Interestingly, the sole demographic factor significantly related to depression was female gender, such that women were twice as likely as men to be diagnosed with major or minor depression (70% vs. 30%). Mazzoni and colleagues concluded the opposite of the Alderete study (2000) and conjectured that the low rate of depression may reflect a “healthy worker” selection bias.



Strengths of the Mazzoni study include its relatively moderate sample size, inclusion of both genders, and identification of languages other than English or Spanish. The study also contributes the important finding that depression has a negative impact on migrant farmworkers' physical health and/or the ability to work. The PRIME-MD PHQ is validated in Spanish and English, but not for individuals of Mexican-descent in particular. Additionally, the instrument is not a diagnostic instrument according to *DSM*-criteria and lifetime prevalence rates are not available with this measure. Other limitations include that the selection of subjects was not random and therefore may not be representative of or applicable to other "Hispanic" farmworkers. Lastly, it is important to note that only approximately one-third of the participants migrated and not all were Mexico-born so the findings are not necessarily specific to Mexican migrant farmworkers.

*The Center for Epidemiologic Studies-Depression Scale and the Personality Assessment Inventory*

The majority of studies with Mexican migrant farmworkers have utilized depression and anxiety screening scales, in particular the Center for Epidemiologic Studies-Depression Scale (CES-D) and the Personality Assessment Inventory (PAI) to assess rates of depression and anxiety. The CES-D is a self-report measure that assesses level of depressive symptoms within the previous week and consists of twenty items rated on a four-point scale. The scale range is from zero to sixty and has a specific symptom threshold of sixteen that designates "caseness" or the need for mental health services. According to the normative data, approximately 20% of the general, presumably Non-Mexican, population is expected to qualify for "caseness" (Radloff, 1977). The

instrument is tailored for use with Mexican-Americans and Mexican-origin adults, and its abbreviated form has been shown to be reliable for Mexican immigrant samples, including migrant farmworkers (Alderete et al., 1999; Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006). The Personality Assessment Inventory (PAI) is a self-report measure used to assess clinical features of symptomatology related to a variety of disorders including anxiety. The Anxiety scale of the PAI consists of twenty-four items rated on a four-point scale. The accepted symptom threshold score is 60 or more (i.e., “caseness is sixty or more”), and it is estimated that 16% of general population individuals will reach “caseness” (Morey, 1991). The PAI Anxiety scale has been found to have adequate psychometric properties among general and Mexican-American samples (Hovey & Magaña, 2000).

The CES-D and Anxiety scale of the PAI are the most common measurements used with migrant farmworkers. To follow are the different studies that utilized the CES-D and PAI presented by migration stream: Western, Midwestern, and Eastern.

#### *The Western Stream*

Alderete and colleagues (1999) collected data in 1996 to examine the prevalence of depressive symptomatology and its distribution on demographic, social support, acculturation, and acculturation stress variables among Mexican migrant farmworkers in rural central California. A total of 500 men and 501 women, between the ages of eighteen and fifty-nine years, were selected using a cluster sampling design. Overall, Indian respondents constituted 11% of the sample (seventy-four men; thirty-three women). The questionnaire included the CES-D to measure depressive symptomatology and questions on sociodemographics, employment, migration history, gender roles and family

dynamics, social support, acculturation and acculturation stress, self-rated physical and mental health status, and physical health problems.

The sample was fairly homogeneous; however, migrant men were more likely to report Mexico as their main country of residence, as well as be unmarried, and have lower incomes (< \$9,000) and education levels (< 6 years) than migrant women. Additionally, migrant men endorsed higher levels of stress due to discrimination, language conflict, and documentation issues.

Overall, the CES-D caseness rates were similar amongst genders (men = 21.1%; women = 19.7%) and to the normative caseness rate (i.e., 20%). Certain variables were significantly associated with elevated scores. In the logistic regression model, disrupted marital status was significantly associated with elevated CES-D scores. Respondents with high levels of acculturation had more than six times the risk of reaching CES-D caseness. Additionally, those with high stress due to discrimination had over twice the risk. On the other hand, respondents with high levels of instrumental support, as measured by having someone to provide a ride or loan money, had half the risk of CES-D caseness. The authors suggested the positive association between CES-D caseness and acculturation, and acculturative stress is indicative of a potential deterioration of farmworker mental health with continued exposure to the U.S. society. In summary, Alderete and colleagues reported that the rates of depressive symptomatology among Mexican migrant farmworkers in central California were within the range of previously reported rates for Mexican-Americans; however, disrupted marital relationships, high acculturation levels, and endorsement of discrimination were related to higher levels of depressive symptomatology.

*The Midwestern Stream*

Hovey and Magaña have published the majority, if not all, of the mental health research regarding Mexican migrant farmworkers in the Midwestern United States. Additionally, they are some of the only researchers to have incorporated qualitative research to capture the phenomenology of the migrant farmworker experience. For these reasons I will examine all of their research together and integrate the findings.

In their first published study, Hovey and Magaña (2000) intended to assess the prevalence rates of anxiety and depression, determine the relationship among acculturative stress, anxiety, and depression, and establish the best predictors of anxiety and depression in a purposeful sample of forty-five Mexican migrant farmworkers (twenty females, twenty-five males) living in the northwest Ohio/southeast Michigan area. The authors did not report the date of data collection. The participants were living in migrant farmworker camps. The participants were between the ages of seventeen and sixty-five, all were first-generation, 62% were married, and 82% identified as Catholic. Most individuals reported relatively low levels of education and extremely low levels of income. An open-ended interview was conducted with each participant in addition to a self-administered battery of questionnaires including the PAI and CES-D.

The sample endorsed high levels of anxiety and depression compared to general population rates. Thirty-eight percent of the participants reached caseness on the CES-D compared to the expected 20%. Twenty-nine percent of the participants reached caseness on the PAI compared to the expected 16%. As hypothesized, migrant farmworkers experiencing elevated levels of acculturative stress also reported high levels of depression and anxiety. Significant independent predictors of depression were anxiety, low social

support, low self-esteem, infrequent church attendance, and disagreement with the decision to live as a migrant farmworker, which accounted for 62% of the variance in this outcome. Acculturative stress, low contribution to the decision to live as a migrant farmworker, and subjective report of little influence of religion as significant independent predictors of anxiety accounted for 50% of the variance in this outcome.

In another study, Hovey and Magaña (2002) focused on anxiety symptomatology, its predictors, and relation to generational status among Mexican migrant farmworkers in a sample of ninety-five Mexican migrant farmworkers (fifty-eight females, thirty-seven males) living in the northwest Ohio/southeast Michigan area. Again the authors did not report the date of data collection. The majority of participants were ages sixteen to thirty-five years, 53.7% were married, and 84% identified as Catholic. Relative to the other studies reviewed, this sample of farmworkers was much younger. Sixty-eight percent of participants were Mexico-born, 26.3% were U.S.-born, and 5.3% were 2nd generation U.S.-born generation. A self-administered battery of questionnaires was used, including the PAI to measure anxiety symptomatology.

The sample revealed an elevated level of overall anxiety ( $M = 55.2$ ) in comparison to the mean of 50.5 found in Morey's (1991) census-matched standardization sample. The PAI caseness rate was 29.5%, but non immigrants' and females' caseness rates were above 30%, whereas the rates of males and immigrants were less than 30% (34.5% females; 21.6% males; 27.7% immigrants; 33.3% non immigrants).

A significant effect was found for generation level on cognitive anxiety, and non immigrants reported greater cognitive anxiety in comparison to immigrants. Low self-esteem, ineffective social support, low contribution and agreement with the decision to

live as a migrant farmworker, greater education, and elevated acculturative stress were associated with high scores on each anxiety scale. Low influences of religion and low religiosity were associated with high scores on each anxiety scale with the exception of the cognitive scale. Lastly, significant independent predictors of anxiety were acculturative stress, contribution to decision to live as a migrant farmworker, and education level.

Magaña and Hovey (2003) conducted a qualitative study during the 1998 summer harvest season to explore migrant farmworkers' own perceptions of what is difficult in their lives. Participants were recruited from labor camps, a migrant rest center, and an apartment complex. Following consent, the qualitative interview was conducted in either Spanish (52%) or English (48%). After the interview participants completed a self-administered battery of questionnaires including the PAI and CES-D. The participants were seventy-five migrant farmworkers (thirty-eight females, thirty-seven males) of Mexican descent in the northwest Ohio and southern Michigan area. The participants' ages ranged from sixteen to sixty-five, 56% of the participants were married, and low levels of education and income were reported (84% completed less than twelve years of formal education; 69.4% of participants earned less than \$15,000 annually). Sixty percent were Mexico-born immigrants; 33.3% were U.S.-born; and 6.7% were 2nd generation U.S.-born. Number of years living in the U.S. ranged from one to thirty-five. Nearly half (46.5%) had lived in the U.S. for more than ten years. With regard to migrating for the purposes of doing farmwork, during the agricultural season at the time of the interviews, 77.5% of participants migrated with family; 5.6% migrated with friends; 12.7% migrated with family and friends; and 4.2% migrated alone. Eighty-three percent of participants

reported being Catholic and attending church at least once per month. However, most participants (62.7%) reported attending church less frequently during the summer harvest season due to their busy work schedule. Content analyses of each interview were conducted to identify the specific stressors and their associated coping mechanisms.

The participants endorsed high levels of anxiety and depression symptomatology. Thirty-nine percent of participants reached caseness on the CES-D, and females reached over twice the normative caseness rate of 20% (42% of females; 35% of males). Thirty-one percent of participants reached caseness on the PAI, and females reached over twice the normative caseness rate of 16% (39% of females; 22% of males).

Of the eighteen stressors that emerged, the most common stressors included: being away from family and friends, rigid work demands, unpredictable work/housing and uprooting, low family income/living in poverty/receiving poor pay, poor housing conditions, language barriers, educational stressors, hard physical labor, lack of transportation and unreliable transportation, exploitation, and lack of daycare. More males than females identified being away from family and friends as a stressor.

The identification of rigid work demands and poor housing conditions were significantly associated with high levels of anxiety symptoms, and the identification of rigid work demands and low family income/living in poverty were associated with high levels of depressive symptoms. Both rigid work demands and poor housing conditions had a medium-to-large influence on anxiety; and rigid work demands and low family income/living in poverty had a small-to-medium influence on depression.

Hovey and Magaña (2003) also examined the prevalence levels of anxiety, depression, and suicidal ideation in a sample of twenty Mexico-born migrant farmworker

women in the Midwest. Participants were recruited from four farmworker camps during the summer of 1999. The age of the sample ranged from twenty to fifty-nine years and all were mothers. The majority of participants were married, Catholic, had less than eight years of formal education, and reported an annual family income between zero and \$4,999 (U.S.). Each participant completed an open-ended interview and questionnaire, including the PAI and CES-D.

High levels of anxiety and depression were found in the sample: 25% of participants reached caseness for anxiety and 33% of individuals reached caseness for depression. Content analysis identified twenty-one stressors experienced by the female farmworkers. A language barrier was the most common stressor mentioned by all the participants. Family dysfunction, ineffective social support, high acculturative stress, and high levels of hopelessness were significantly related to high depression. Migrant farmworkers with suicidal ideation reported significantly lower self-esteem, greater family dysfunction, less effective social support, more hopelessness, higher acculturative stress, and greater depression than migrant farmworkers without suicidal ideation. The relationships among predictor variables and anxiety were not reported.

The findings and generalizability of Magaña and Hovey's studies were limited by small sample sizes, sampling techniques, and reliance on the self-report method. Additionally, the CES-D and PAI, at the time, were not fully validated with Mexican migrant farmworkers. However, Hovey and Magaña did explore new and important topics in their research including the influence of religiosity, suicide risk, and qualitatively defined stressors and related coping mechanisms. The authors suggested that future research include spirituality in order to more comprehensively measure social and



emotional support. They also admitted a need for a more comprehensive measure of suicidal ideation. Other recommendations by the authors for future research included increasing the studies' generalizability, assessing specific pathologies, distinguishing between migrant and seasonal workers, and comparison with the psychological functioning of other migrant streams.

### *The Eastern Stream*

The most recent research with migrant farmworkers along the Eastern stream has been conducted in North Carolina, due to the exponential growth of Mexican migrant farmworkers in that state. Grzywacz and colleagues (2006) evaluated whether ambivalence about the decision to leave one's family for work contributes to poor mental health among male Latino migrant farmworkers in North Carolina. Participants were sixty male migrant farmworkers recruited during June and July 2003, in a four-county area of east-central North Carolina<sup>6</sup>. Three interviewers collected questionnaire data in face-to-face interviews. Participants were administered three scales: the PAI, the CES-D, and the Migrant Farmworker Stress Inventory (MFWSI). The MFWSI was developed to evaluate the mental health effects of stressors inherent to migrant farmwork for Latino adults (Hovey, Magaña, & Booker, 2001; Magaña & Hovey, 2003). Higher scores on the MFWSI are associated with greater anxiety, depression, and suicidality (Hovey & Seligman, 2005). Alcohol dependence was measured using the CAGE. The salience of participants' decisions to come to the U.S. was measured on a three-point scale that included reasons why they might have wanted to come to the U.S. or wanted to stay in their home country. Three indicators of ambivalence were also created including, marital

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<sup>6</sup> Only males were recruited because virtually all female farmworkers were accompanied by their spouse, and the study's inclusion criteria specified that the spouse still live in the country of origin.

ambivalence, parental ambivalence, and filial ambivalence. Ambivalence resolution was indicated by the variable *call relative*, or how many times a respondent called a relative in Mexico or his country of origin.

Approximately 95% of the sample were Mexico-born. Eighty percent of men came directly from their country of origin to North Carolina and had been in the country for less than three years, and 75% of men had not seen their wives (and presumably family) in the previous six months. It was reported that 90% of the participants had the equivalent of a high school education.

Descriptive analyses suggested that the Latino men in the sample had poor mental health. Nearly 40% of participants, which is twice as high as the expected rate of 20%, met or surpassed caseness on the CES-D. Approximately 17% of participants met the threshold of sixty or more on the PAI, which is close to the expected rate of 16% (Morey, 1991). Lastly, 40% of the individuals reached the criterion for potential alcohol dependence.

The majority of participants endorsed some form of ambivalence. More than half of the participants endorsed all three forms of ambivalence, 12% experienced two forms of ambivalence, while 13% and 8% respectively experienced one form of ambivalence or none at all in their decision to migrate to the U.S. The prevalence of marital ambivalence was greater among men who were in the U.S. less than one year in contrast to those who were in the U.S. for more than one year. Men with marital ambivalence reported encountering more difficulties in the U.S. and had greater depression scores than those without marital ambivalence as assessed by the MFWSI.

As hypothesized, each type of family-related ambivalence was associated with more severe anxiety while controlling for level of education and number of years living in the U.S. Significant interaction effects were found for both marital and parental ambivalence with frequency of calling relatives. Results also supported the researchers' hypothesis that ambivalence creates a lens through which migration circumstances are experienced. Pooled *t*-tests indicated that men with marital ambivalence reported encountering more difficulties in the U.S. than those without marital ambivalence, as assessed through the MFWSI. Likewise, men with parental ambivalence reported more difficulty in the U.S. than those without parental ambivalence.

With regards to depression, little evidence was found indicating that family-related ambivalence was associated with depression; however, *call relative* remained a mediating factor. The results did not support a relationship between men who experienced marital ambivalence and greater depression scores. There was a significant interaction effect between parental ambivalence and calling relatives, such that men with parental ambivalence who called relatives daily scored an average of seven points lower on the depression scale than those who called relatives two to three times per week.

The Grzywacz study examined a new construct, *ambivalence*, for the study of migrant mental health, and did so with a newer, less well-known community of Latino (mostly Mexican) migrant farmworkers. They also identified "contact with a relative" as a potentially important factor to maintaining the mental health of Latino migrant farmworkers. However, the results of the study have limited generalizability because the sample was small and not randomly selected. Additionally, the cross-sectional data prohibits making causal inferences. The authors also note that it is possible that

individuals with heightened levels of anxiety may have distorted retrospective views of circumstances that were salient prior to migration.

Hiott and colleagues (2008) also examined stressors that contribute to poor mental health in Mexican migrant farmworkers working in North Carolina. Participants were 125 male migrant farmworkers recruited during June and July 2003 in east central North Carolina. A site-based approach was used across twenty-six sites, including farm labor camps, trailer parks, and rooming houses. Three bilingual interviewers who were native Spanish speakers and had farmworker backgrounds conducted face-to-face interviews with participants. Interview questionnaires included items on participant personal characteristics, the MFWSI, the PAI, the CES-D, and the CAGE.

The majority of participants in this study were “newcomers” to the U.S. The majority of participants (72.1%) were less than thirty-five years of age. Over half had an elementary school education (55.2%). Most participants (57%) reported living in the U.S. less than one year. All participants were immigrants; the majority was from Mexico (95.2%), with a few from Guatemala (3.2%) and Honduras (1.6%). Two-thirds of men reported being married or living as married, but most were unaccompanied by their partner and family. Twenty percent of participants had worked in agriculture less than one year and 40.7% had been engaged in farmwork for four or more years.

Overall, there was a high rate of depression in this sample. Approximately 42% of the participants reached caseness on the CES-D, which is double the expected 20% norm rate (Radloff, 1977). Approximately 18% reported clinically significant levels of anxiety on the PAI which is similar to the expected 16% norm rate (Morey, 1991). Greater than one third (37.6%) of farmworkers met potential caseness for alcohol dependence on the

CAGE as indicated by affirmative responses to two or more items. Thirty-eight percent of participants reported significant levels of stress on the MFWSI.

Hiott and colleagues conducted a factor analysis of the MFWSI which yielded a five-factor solution. The first factor, “Legality and Logistics,” contained items reflecting hardships confronted by immigrants due to working and living in this country. The second factor, “Social Isolation,” included items reflecting feelings of isolation and stress resulting from being separated from friends and family. “Work Conditions” consisted of items having to do with both practical work problems and feelings of discrimination and lack of respect. The “Family” factor included items reflecting concerns the farmworkers had for family members, particularly spouses and children. The fifth factor, “Substance Abuse by Others,” consisted of items assessing how others’ use of alcohol and drugs affected the individuals. Altogether these factors accounted for 40% of the variance in the MFWSI.

The most impactful factors on mental health scores included social isolation and stressful working conditions. Greater social isolation was associated with higher anxiety scores and greater depression symptoms. Likewise, more stressful working conditions were associated with higher anxiety scores and greater depression symptoms. Social isolation was indicated as having the strongest potential effect on farmworker anxiety, whereas stressful working conditions had the strongest potential effect on depressive symptoms. Higher education was the only significant demographic variable related to increased depression.

Strengths of the study included the use and further development of the MFWSI, an instrument specifically designed for and normed on Mexican migrant farmworkers.

Another strength of the study is that it was conducted in North Carolina, and thus, offers preliminary mental health information on a growing population of workers. The researchers also utilized instruments that have been validated with individuals of Mexican origin. Finally, sampling techniques were used to provide a representative sample where random selection was not possible. Limitations of the study included reliance on self-report method and cross-sectional data which prohibits the inference of causality such that cause-and-effect associations between the categorized stressors and the diagnoses of anxiety and depression cannot be made. Furthermore, the CES-D and PAI only provide cutoff scores rather than clinical diagnostic categories.

## DISCUSSION

For decades it has been acknowledged that Mexican migrant farmworkers in the U.S. endure harsh living and working conditions, and presumed that these stressors have a negative impact on their mental health. Not until the past decade has psychological research attempted to empirically evaluate this assumption. The purpose of this literature review was to critically examine the findings of the past decade regarding the prevalence rates of depression and anxiety in the Mexican migrant farmworker population, as well as to highlight significantly associated or predictive demographic and sociocultural variables that are indicative of risk to Mexican migrant farmworkers' mental health.

Overall, the findings indicate high levels of depression and anxiety in the Mexican migrant farmworker communities located in the Midwest and East Coast streams. Symptoms of depression and anxiety were significantly associated with factors related to the migrant lifestyle. The methodological limitations of the research are important and will be addressed further on in this paper. The following sections

synthesize the findings from the preceding literature review and provide a commentary on the state of the literature regarding the mental health of Mexican migrant farmworkers at this time.

### Prevalence

#### *Depression*

Herein I will review the overall prevalence rates of depression as determined by the seven studies which investigated depression in the migrant farmworker population. One of these studies used a structured psychiatric interview and six studies used the CES-D screening scale. Although, it is difficult to make strong conclusions regarding the prevalence rates of depression because of methodological limitations, the majority of Mexican migrant farmworkers in the Midwest and East Coast streams across these seven studies endorsed high levels of depression-related symptoms whereas migrant farmworkers in the West Coast stream endorsed levels similar to those of the general population. I will speculate about how the different types of assessment, methodological limitations, and the location and nature of the participant samples may have contributed to the variability in rates of depression amongst Mexican migrant farmworkers.

The only epidemiological study with Mexican migrant farmworkers was conducted in central California during 1996 and concluded that Mexican migrant farmworkers were at greater risk for psychiatric disorders with prolonged stay and exposure to the dominant U.S. society (Alderete et al., 1999). The lifetime prevalence of a Major Depressive Episode for the entire sample, both Indian and Non-Indian Mexican migrant farmworkers, was 3.8%, and a lifetime prevalence rate of Dysthymia was 1.9%. In order to put these numbers in some context it is important to compare them to the rates

of other Mexican populations not identified as migrant farmworkers. A more recent epidemiological study, a combination of the National Comorbidity Study–Replication (NCS-R) and the National Latino and Asian American Study (NLAAS) conducted between 2001 and 2003 (Alegría, Canino, Shrout, Woo, Duan, Vila et al., 2008), reported lifetime prevalence rates of psychiatric disorders for immigrant Mexicans. The Mexican immigrant sample’s lifetime rate for Major Depressive Disorder was 11.8% and the rate for Dysthymia was 2.8%. Therefore the lifetime prevalence rates of Major Depressive Disorder and Dysthymia for the Mexican migrant farmworkers who participated in the California study were lower than the rates of the Mexican Immigrant sample that participated in the NLAAS. Of course, limited conclusions can be made based on this comparison since the Mexican migrant farmworker rates are based on data from one relatively small sample located in one part of the country.

The majority of data on depression rates of Mexican migrant farmworkers was collected using screening scales. Most of the studies utilized the CES-D screening scale with one exception. Mazzoni and colleagues (2007) utilized the PRIME-MD PHQ as a screening tool to assess for depression. They reported the rate of “major depression” to be 3% and “minor depression” to be 6% (Mazzoni et al., 2007), which are similar to the prevalence rates reported by Alderete and colleagues (2000) for MDD and Dysthymia amongst the sample of Mexican migrant farmworkers in California. Even so, comparison between the Mazzoni (2007) and Alderete (2000) studies is difficult given the differences in measurement. Mazzoni et al. (2007) did not use the diagnostic criteria of the *DSM-III TR* nor did the authors indicate whether the rates they reported were current, past-year, or lifetime prevalence rates.



The five additional depression studies utilized the CES-D screening scale to assess for rates of depression among Mexican migrant farmworkers: The reported rates of significant depressive symptomatology that warranted treatment, or “caseness,” ranged from 20% to 41% (Alderete et al., 1999; Grzywacz et al., 2006; Hiott et al., 2008; Hovey & Magaña, 2000, 2003; Magaña & Hovey, 2003). Of the Western Stream sample (i.e., California), 21% of women and 19.7% of men reached caseness for depression (Alderete et al., 1999). These rates are typical of the general population samples’ rates for caseness (i.e., 20% on the CES-D, Radloff, 1977). The Midwestern and Eastern Stream samples had higher caseness rates than those of the general population: in the Midwest the rates ranged from 33% to 38% (Hovey & Magaña, 2000, 2003; Magaña & Hovey, 2003), and in the Eastern Stream the rates were 40% and 42% (Grzywacz et al., 2006; Hiott et al., 2008). Taken together, these studies suggest a relatively high level of depressive symptomatology among Mexican migrant farmworkers that may not be sufficiently severe to meet diagnostic criteria on a structured interview. Below are some possible reasons for the low lifetime prevalence rates of MDD and Dysthymia amongst Mexican migrant farmworkers as compared to other populations, as well as speculation regarding the differences found in prevalence rates across studies that utilized the CES-D.

#### *Methodological Considerations*

There are important methodological considerations to take into account when examining the reported prevalence rates of depression for Mexican migrant workers. Overall, the generalizability of the findings are limited due not only to a small number of studies, but also that most of the studies had small sample sizes and used cross-sectional data collection. None of the studies had a sample size that was even close to the number

seen in dominant culture epidemiologic studies (Alegría et al., 2008; Kessler et al., 1994). These methodological realities limit the representativeness of the sample and make it difficult to draw conclusions about the specific effects of specific sample variables (e.g., age, years living as a migrant farmworker, etc.) on the findings.

Also, the differences in types of assessments used, specifically the CES-D screening scale versus a structured psychiatric interview, make it difficult to draw conclusions from the findings. The CES-D depends on the subjective report of the participant versus a formal interview regarding diagnostic criteria conducted by a trained interviewer. Secondly, the CES-D assesses some but not all depressive symptoms experienced within the past week, whereas the *DSM* requires a specific duration of symptoms and impairment in functioning that is necessary to be diagnosable. Third, the CES-D will likely overestimate the prevalence rate of depression since the criteria for caseness on these measures is less stringent than is the criteria for a clinical diagnosis. Finally, lifetime prevalence rates are also likely to be higher than current or past-year rates since the sampling window encapsulated by a lifetime is much greater than point prevalence rates.

#### *Demographic and Regional Differences.*

Another possible explanation for variability in and elevation of caseness rates as measured by the CES-D screening scale are the demographic and regional differences between the different migrant streams. Some authors conjectured that the social networks and support systems necessary to successfully adapt to a new society may not be as well developed in the Midwestern and East Coast migrant communities as compared to the West Coast migrant communities (Magaña and Hovey, 2003, p. 84). This would result in

higher rates of depression for migrant farmworkers in those regions as compared to other regions, and this was supported by the studies' findings. The findings of the studies reviewed also suggested that Mexican migrant farmworkers, in particular males, in North Carolina were more likely to be "newcomers", more likely to be unauthorized to work in the U.S., and more likely to be unaccompanied by family (Grzywacz et al., 2006; Hiott et al., 2008). These factors may partially explain why the highest rates of depression are seen in samples from the East Coast stream.

Below I summarize additional variables significantly related to depression prevalence rates across studies. Variations in the presence or absence of these factors are thought to partially account for the reported rates of depression seen across studies. Not all studies investigated all variables, thus conclusions are limited.

#### *Variables Associated with Depression*

The main variables significantly associated with or predictive of clinically significant depression symptoms included in the reviewed studies are organized in four categories: 1) Social Support, Religion and Religiosity; 2) Acculturation and Acculturative Stress; 3) Psychological Ambivalence and Perceived Control; and 4) Working and Living Conditions. However, at times it is difficult to separate these factors into distinct categories since aspects of each can and do cross over from one category to another. These categories will be reviewed as they relate to rates of depression.

#### *Social Support, Religion, and Religiosity*

A majority of the studies found that lack of various forms of support and/or the ability to attain it was related to higher rates of depression. Across regional migration streams and gender, ineffective social support significantly impacted depression scores.

Social support was conceptualized in various ways including emotional support, as well as family dysfunction, social isolation, and lack of instrumental support as measured by having someone to provide a ride to work or to loan money (Alderete et al., 1999, 2000; Hovey & Magaña, 2003; Mazzoni et al., 2007). The inability to acquire social support was noted as a significant source of stress and was related to increased depression scores, as indicated by the inability to connect and communicate within the society, including language barriers (Hovey & Magaña, 2003; Mazzoni et al., 2007). In summary, social isolation and lack of social support were consistent predictors of increased depression scores across studies.

Infrequent church attendance, which could overlap with social support, was also found to be associated with symptoms of depression (Hovey & Magaña, 2000). There are no other studies besides those by Hovey and Magaña that examined religiosity and church attendance systematically; however, this author considers this construct to be an important factor since religion and faith-based practices do have an important place in Mexican culture. The importance of adequate social support and religion/religiosity within Mexican culture will be discussed in later sections.

#### *Acculturation and Acculturative Stress*

Many of the studies, either through specific scales or associated variables, indicated a significant positive relationship between higher acculturation levels and acculturation stress and depression. High acculturative stress as measured by the SAFE scale in two samples in the Midwest was a predictor of depression and suicidal ideation (Hovey & Magaña, 2000, 2003). In a study by Alderete and colleagues (1999) in California, respondents with high levels of acculturation, including prolonged residence

in the U.S., had more than six times the risk of reaching CES-D caseness as compared to those with low levels (Alderete et al., 2000). In summary, a variety of studies reported significant relationships between acculturation and acculturative stress with an increase in depression.

### *Psychological Ambivalence and Perceived Control*

Although only two studies investigated ambivalence, or having conflicted feelings of leaving one's family, and an associated construct, control or choice (i.e., over migration and becoming a migrant farmworker), these variables were implicated in increased depression rates. Only one of the studies found a significant association between lack of control and/or choice to immigrate and be a migrant farmworker and increased levels of depression (Hovey & Magaña, 2000). Grzywacz and colleagues (2006) did not find robust support indicating that family-related ambivalence was associated with depression or substance abuse; however, they did note that the men who experienced ambivalence about leaving their spouses when deciding to migrate did have greater depression scores, and men with parental ambivalence who called relatives daily scored an average of seven points lower on the depression scale than those who called two to three times per week. One noted difference between studies is that Hovey and Magaña included both male and female farmworkers, but the Grzywacz study did not.

### *Working and Living Conditions*

Working and living conditions across studies were associated with higher levels of depressive symptoms. Such conditions included rigid work demands, low family income/living in poverty, stressful working conditions, and discrimination/lack of respect. Mexican migrant farmworkers in the Midwest who endorsed rigid work demands

(e.g., working long hours; having no days off; working while it was raining) and limited financial resources to purchase food, clothing, and medical care also endorsed higher levels of depressive symptoms (Magaña & Hovey, 2003). Other researchers identified feelings of discrimination and lack of respect, in addition to practical work problems, to have the strongest potential effect on depressive symptoms especially amongst Mexican male migrant farmworkers (Alderete et al., 1999; Hiott et al., 2008). In fact, Alderete and colleagues (1999) reported that those with high stress due to discrimination had over twice the risk of reaching CES-D caseness as compared to those with low stress amongst Mexican migrant farmworkers in California.

Finally, characteristics of the workers themselves were related to the reported rates of depression. In California and the Midwest, there were no significant differences in rates of depression between the genders with the exception of one study (i.e., Mazzoni et al., 2007). In California, Mexican migrant farmworkers of Indian descent had higher rates of any mood and anxiety disorder as compared to non-Indian workers, (8.3% vs. 5.5% respectively for any mood disorder) (Alderete et al., 2000). Lastly, workers in California and North Carolina whose marital status or partnership was disrupted had higher rates of depression. Thus, these few studies found that gender differences, indigenous heritage, and marital status were constructs that also influenced depression.

### *Anxiety*

Similarly to depression, I will review the overall prevalence and caseness rates of anxiety as determined by one study which used a structured psychiatric interview, one study which used a nondiagnostic interview method, and the six remaining studies which assessed anxiety with the PAI screening scale. I will then speculate about some of the

possible explanations for the variability and elevation in rates of anxiety amongst Mexican migrant farmworkers. Alderete and colleagues (2000) assessed for lifetime prevalence with the CIDI-UM using a structured psychiatric interview with a sample of both men and women migrant workers in central California. The lifetime prevalence for any anxiety disorder was 12.5%: specifically, 0.9% panic disorder; 5.8% agoraphobia without panic disorder; 5.8% social phobia; and 6.2% simple phobia. Interestingly, agoraphobia was the most prevalent disorder (6.9%) amongst women. Mazzoni and colleagues (2007) assessed for panic disorder with the PRIME-MD PHQ in the Northwest with Mexican migrant farmworkers and determined a total panic disorder prevalence rate of 1.9%. In order to put these numbers in context I will compare them to the prevalence rates of anxiety disorders among Mexican immigrants sampled by the NLAAS (2008) epidemiological study. The anxiety prevalence rates for Mexican immigrants in the NLAAS study were as follows: 14.2% for any anxiety disorder; 3.4% agoraphobia without panic disorder; 3.4% panic disorder; and 4.7% social phobia (Alegria et al., 2008). The Mexican migrant farmworkers sampled by Alderete and colleagues (2000) endorsed slightly lower overall anxiety prevalence rates than the Mexican immigrants sampled by the NLAAS. But, Mexican migrant farmworkers' prevalence rates for agoraphobia without panic disorder and social phobia were slightly higher than the NLAAS sample of Mexican immigrants. These findings may indicate that overall rates were similar, with some variations in subtypes. Of course no firm conclusions can be made based on this comparison since these rates are based on data from two small samples.

In addition to psychiatric interview studies, the primary screening measure used to assess anxiety for Mexican migrant farmworkers was the PAI. There was wide variability in the reported prevalence of anxiety symptomatology as assessed by this screening scale. The rates of anxiety ranged from 17% to 31% (Grzywacz et al., 2006; Hiott et al., 2008; Hovey & Magaña, 2000, 2002, 2003; Magaña & Hovey, 2003). Some reported rates were similar to what would be expected in the general population (i.e., 16%, Morey, 1991) and some were much higher. Below is a discussion regarding the possible explanations for the variability.

Not unlike the variance in the reported prevalence rates of depression, the variability in the reported anxiety prevalence rates could be attributed to the differences between and limitations of the studies' assessment tools. Like the CES-D, the PAI screening scale depends on the subjective report of the participants versus formal interviews conducted by trained interviewers. The questions are based on symptoms related to anxiety disorders, but the results are not diagnostic or indicative of meeting criteria for a *DSM* diagnosis. For these reasons it is likely that this method will produce higher scores and inflated prevalence rates.

#### *Methodological Considerations*

Another possible explanation for variability in anxiety prevalence rates as measured by the PAI screening scale are the sizes and locations of the samples as well as the low numbers of studies in general. The PAI was almost exclusively administered to Midwestern samples, and the caseness rates were elevated amongst this population. The only other study reviewed here that utilized the PAI was in North Carolina where the participants endorsed a similar rate to general population rates of caseness (Morey, 1991).



None of the studies had a sample that was even close to the number seen in dominant-culture epidemiological studies (Kessler et al., 1994; Alegría et al., 2008). In addition to the need to increase the generalizability of all the studies in order to effectively compare epidemiological research, it will also be helpful to examine the stressors significantly associated with anxiety prevalence. There is a great need to increase the representativeness and generalizability of these studies that relied on self-report measures, purposeful sampling, and cross-sectional design. Below, I summarize the variables significantly related to anxiety prevalence rates across studies. The studies that examined anxiety were primarily conducted in the Midwest, and thus, regional differences would not explain variations between studies as this variable was held constant for the most part. However, geographic region can account for elevated rates across the group as a whole.

#### *Variables Associated with Anxiety*

It is difficult to draw conclusions about the variables associated with anxiety since only a few studies examined this construct, but I will review here the variables that were found to be associated with or predictive of symptoms of anxiety. I have organized them into four categories: 1) Social Support, Religion and Religiosity; 2) Acculturation and Acculturative Stress; 3) Psychological Ambivalence and Perceived Control; and 4) Living and Working Conditions.

#### *Social Support, Religion and Religiosity*

Ineffective social support and social isolation were reported to be associated with elevated anxiety rates (Hovey & Magaña, 2002; Hiott et al., 2008). Greater social isolation as measured by the Migrant Farmworker Stress Inventory (MFWSI) was

associated with greater anxiety scores and had the strongest potential effect on farmworker anxiety (Hiott, et al., 2008). Small or low influences of religion and religiosity were also associated with elevated anxiety symptoms. Those participants who did not attend church regularly or who endorsed low levels of religiosity or little involvement in religious practices tended to be more anxious (Hovey & Magaña, 2000, 2002).

#### *Acculturation and Acculturative Stress*

Two of Hovey and Magaña's studies (2000, 2002) reported acculturative stress as a significant predictor of anxiety. Additionally, less education was also associated with increased anxiety scores (Hovey & Magaña, 2002). It should be noted that education is often included as an important component of acculturation measures, and therefore, this was also associated with increased anxiety scores.

#### *Psychological Ambivalence and Perceived Control*

Ambivalence and low contribution to the decision to immigrate and live as a migrant farmworker were also significant predictors of anxiety (Grzywacz et al., 2006; Hovey & Magaña, 2000, 2002). Marital and parental ambivalence as measured by Grzywacz and colleagues (2006) were associated with more severe anxiety while controlling for level of education and number of years in the U. S. In both cases, more frequent contact with relatives in Mexico was associated with a reduction in anxiety. Men with marital ambivalence who called home once each week had anxiety scores of 25.6 on average, versus men with marital ambivalence who called home virtually every day who had anxiety scores of approximately 17.8. Amongst men with parental ambivalence,

anxiety scores were eight points lower for those who called relatives every day in contrast to those who called once each week (Grzywacz et al., 2006).

### *Living and Working Conditions*

Stressful living and working conditions were also indicated in increased anxiety symptomatology. Rigid work demands and stressful working conditions, including low pay and living in poverty were associated with elevated anxiety scores (Hiott et al., 2008; Magaña & Hovey, 2003). Accordingly, poor housing conditions had a medium-to-large influence on anxiety (Magaña & Hovey, 2003).

Finally, characteristics of the workers themselves were related to the reported rates of anxiety. In California, Mexican migrant farmworkers of Indian descent had slightly higher rates of any anxiety disorder than workers that were not of Indian descent (14% vs 12.3%, respectively). And in the Midwest, females and U.S.-born Mexican migrant farmworkers had higher rates of cognitive anxiety than males and Mexico-born workers.

In conclusion, certain demographic and sociocultural factors did significantly impact the mental well-being of Mexican migrant farmworkers. These factors warrant further investigation into their reliability and validity, because they may serve as potential targets of future interventions. It is my opinion that these factors surfaced in large part due to their intrinsic relationship with the values of the Mexican culture, specifically the values of *personalismo*, *familismo*, *confianza*, *respeto*, and *tener fe*. In the following section, I will review these common values and how they may relate to depression and anxiety in Mexican migrant farmworkers.

### Mexican Values

When doing cross-cultural research, it is important to take into consideration the traditional cultural values that apply to the population of interest. Personalismo and confianza are two values important to establishing and maintaining social support in Mexican culture. As the findings from this review indicated, social support and social isolation were two main factors that contributed to or protected from significant symptoms of depression and anxiety amongst Mexican migrant farmworkers. Personalismo refers to “valuing interpersonal harmony and relating to others on a personal level,” and confianza is a substantial level of trust within a relationship (Anez, Paris, Bedregal, Davidson, & Grilo, 2005, pp. 224-226). Both personalismo and confianza are two values important to establishing and maintaining social support in Mexican culture. However, the lifestyle of the Mexican migrant farmworker in general does not foster the development of familiarity and trust within the dominant U.S. society due to language barriers, physical isolation in rural areas, intimidation, exploitation and discrimination, and fear of deportation to name a few interfering factors.

Another explanation offered for the importance of adequate social support as a protective mental health factor for Mexican migrant farmworkers is the traditional emphasis on collectivist values and the importance of family within the Mexican culture. In Mexican culture, the family is most often the core source of emotional support for its members or *familismo* (Alvarez, 1987 and Rueschenberg & Buriel, 1989 as cited by Hovey & Magaña, 2003). Familismo is characterized by “loyalty, reciprocity, and solidarity” (Anez et al., 2005, p. 224). It is not surprising then that the highest rates of depression and anxiety were found amongst the male Mexican migrant farmworkers in North Carolina who were more likely to have just recently migrated and be

unaccompanied by family than amongst any of the other migrant workers from different regions. The toll that the migrant lifestyle takes on the Mexican family were captured in this review by constructs like family dysfunction, ambivalence about leaving one's family in Mexico to travel abroad for work, and lack of control and choice in immigrating and becoming a migrant farmworker. All of these factors were found to be significant contributors to or protection from developing mental health problems.

It is also notable that discrimination was a significant factor for Mexican men who endorsed significant symptoms of depression, perhaps because it violates the hierarchy endorsed by the value of *respeto*. Discrimination may damage the self-perception of the male who is used to seeing himself as someone who deserves respect within Mexican culture (Anez et al., 2005, p. 225).

Lastly, low religiosity and low church attendance were significantly related to increased depression and anxiety among Mexican migrant farmworkers in the Midwest. *Tener fe* is a Mexican value and mindset that facilitates coping with stressful situations or prevents negative affect by reminding oneself to have faith in a benevolent God or a higher power that will help one overcome adversity (Anez et al., 2005). It is possible that those participants who endorsed higher levels of religiosity or church attendance were able to call upon this value as a source of coping when feeling depressed or anxious. At this point, it is conjecture that these values enable early immigrants to cope with the stress of living and working in a foreign country. However, it is important to consider the cultural context when examining rates of mental health disorders for diverse populations.

Lastly, it is important to highlight that Mexican migrant farmworkers are a marginalized population in the U.S. whose basic human rights are violated daily. They

are all too susceptible to inadequate pay for their labor, and unsafe, inadequate, and frequently exploitive working and living conditions. These are issues that must be addressed and rectified regardless of mental health statistics.

### LIMITATIONS

There are several limitations which qualify the findings of the reviewed studies, including methodological and measurement issues. A specific limitation of this review is the lack of quantitative analysis implemented to test the significance of these findings across methods and settings. Thus, this review was qualitative in nature rather than a typical meta-analysis. Additionally, the comparisons I made between variables related to anxiety and depression were inferred since I compared constructs that I assumed to be related but were measured differently across studies.

The studies themselves were also limited methodologically. All of the studies relied on a cross-sectional design, so they examined all of their participants at only one point in time, not longitudinally. Therefore, findings are only descriptive and do not infer causal relationships between variables. Additionally, all except two studies used screening scales to determine prevalence rates. Screening measures rely on the subjective report of the participants and do not use *DSM* diagnostic criteria to determine caseness; therefore, they are likely to overestimate the number of respondents who meet criteria for a depression or anxiety-related disorder. Also any information regarding the validity of the CES-D and PAI in regards to the *DSM* diagnostic categories was not able to be found by this author. As noted previously, the one study that did utilize a structured psychiatric interview to determine prevalence rates only reported lifetime prevalence rates, which

will be higher than prevalence rates measured at a more specific point in time (i.e., current, past year, etc.).

### Cultural Assessment Considerations

It is also important to recognize the cross-cultural component of assessment within this review since it incurs potential measurement and interpretation limitations of its own. It is possible that the measures under or overestimated the prevalence of depression and anxiety within this population since the criteria for depression, anxiety, and related symptom expression is based on the dominant Western, Caucasian, middle-class understanding of these disorders that may not accurately reflect manifestations found in Latino cultural groups (England, Mysyk, & Avila- Gallegos, 2007; Guarnaccia, Lewis-Fernandez, & Marano, 2003). Another important cultural limitation of the assessment tools employed in these studies is that despite most of them being validated with individuals who are Spanish-speaking or Mexican-American or Mexico-born, only two, the CES-D and MFWSI, have been psychometrically tested and approved for use with Mexican migrant farmworkers. It is also possible that the assessment results of these studies have overpathologized Mexican migrant farmworkers. Some cultural paranoia may be adaptive for this group and represent a normative response to discrimination and poor working conditions for migrant farmworkers.

Lastly this review did not go into detail or examine rates of alcohol and substance use among this population despite its important connection with increased rates of mental health problems, acculturation issues, and other social challenges specific to Mexican migrant farmworker communities (Alaniz & Alaniz, 2002; for a review see Garcia & Gondolf, 2004)

## DIRECTIONS FOR FUTURE RESEARCH

Given these preliminary results, more assessment of the mental health of Mexican migrant farmworkers is warranted, including assessments that include culturally-bound syndromes and culturally-relevant descriptions of mental health problems and their causes and cures. Despite the constraints around conducting large-scale epidemiological studies with Mexican migrant farmworkers in the U.S., the implementation of more studies that utilize the same structured psychiatric interviews would be useful to hone the instrument's psychometric properties with Mexican migrant farmworkers. These would also make possible more meaningful comparisons across migration streams, especially in regard to demographic and socio-cultural factors. It would additionally be worthwhile to incorporate other disorders that there is valid reason to believe would be common in this population. In particular, Post-traumatic Stress Disorder (PTSD) should be explored since Mexican immigrants, especially if undocumented, are a marginalized population who are at greater risk of experiencing trauma. Trauma is frequently related to the migration journey, issues related to separation from family, institutional discrimination, life-threatening illness, and poverty. Thus, PTSD as a specific form of anxiety is important to assess in this group.

The factors identified in the research thus far as either protective factors or as significantly associated with symptoms of depression and anxiety offer preliminary ideas for research to address treatment and prevention. Offering access to treatment that is culturally meaningful and appropriate for Mexican migrant farmworkers will also be a challenge for future research (Smedley, Smith, & Nelson, 2003). The published research regarding interventions and access to treatment by the medical field are seemingly ahead



of mental health; therefore, to consult our colleagues' literature that have already implemented different interventions with this population might prove to be a productive collaboration.

The development of an assessment-intervention model that is designed specifically to address the needs of the Mexican/Latino migrant farmworker population will be an integral part of providing mental health services to this population. Part of research in the future will be the development of assessment tools that can be used to reliably identify at-risk individuals and/or individuals in need of mental health services, and the intervention model which will be able to address the necessary issues.

Research has shown that the longer Mexican immigrants reside in the U.S. the more likely they are to have mental health problems, also known as the "immigrant paradox." This finding was reaffirmed in this review, however some evidence suggests that recent migrants, or "newcomers," may also confront unique stressors that threaten their mental well-being (Alderete et al., 2000; Hovey & Magaña, 2003; Hiott et al., 2008; Gryzwacz et al., 2006). Therefore, it would make sense to design an intervention that is preventative in nature and aimed at newer immigrants and ways to cope with acculturative stress (Alegría et al., 2008).

In the meantime, as mental health advocates, we do have data that supports certain interventions that can be quickly implemented and would have a large impact on the migrant farmworker's quality of life. Some of these interventions include easy phone access to call home in migrant living and/or working quarters, the provision of adequate and sanitary living conditions, a living wage, access to drinking water, shade, and waste facilities while working in the fields, and appropriate education regarding worker safety,

and employee rights. Social support is another important, and relatively quick, intervention to implement. Employers, local churches, and organizations could create, in collaboration with the workers, meeting centers and events to provide the workers with safe opportunities to establish a social support system while away from home and family. The current research findings can be used to advocate for the basic rights of all foreign-born farmworkers and to garner resources at a community, state, and federal level.

Lastly, we as the profession of psychology and as individuals can work toward becoming more culturally-sensitive mental health providers. We can do this by actively addressing our own cultural histories, and any biases or prejudices that would inhibit us from providing benevolent services. We can also become more knowledgeable about how to conduct culturally-appropriate research and therapy, and can learn how to implement effective mental health treatments for marginalized populations.

In summary, Mexican migrant farmworkers are a resilient population, however workers in the Midwest and East Coast endorsed significant symptoms of depression and anxiety. At this time it is difficult to say if depression is more prevalent than anxiety or vice versa in this population due to the small number of studies. The recent investigations into the role that anxiety may play in the mental health of migrant farmworkers in the Midwest have been important especially since this seems to be a significant problem. Furthermore, there seem to be a number of factors which can reduce or exacerbate these mental health conditions and these factors can be addressed through research and intervention. Overall, approximately 25% to 33% of all workers are likely struggling with mental health concerns that meet threshold levels for treatment. This review has

highlighted the needs of this community and signals a call to action for individuals who provide services to Mexican migrant farmworkers living in the United States.

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